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POPULATION MIGRATION PROCESSES AND DIGITAL COVERAGE IN RURAL AREAS OF BULGARIA

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Abstract

Geodemographic as a scientific discipline includes the mechanical movement in its nomenclature, which, in turn, contains demographic processes of settlement and emigration, which form the mechanical growth of the population. It is interesting to trace the intertwining of migration processes with Internet access and the extent of its use in rural areas. The development includes research and analysis of the mechanical movement of the population in rural municipalities (region) and districts of the country, united in their regions according to the NUTS classification for the period 2015-2019. The mechanical movement of the population in tables and figures is visualized, indicating the dynamics of numerical values in per thousand (‰) and their change during the study period. On the other hand, data on the share of Internet access and its regular use are presented. Conclusions are presented in the conclusion of the review of the mechanical movement of the population in rural areas of the country and how this may affect the trends for accessibility and coverage of digital services.

Key words**:** *Rural areas, mechanical traffic, migration, internet access and digital services.*

INTRODUCTION

Regional development is proving to be an increasingly recognized national priority, despite Globalization as a process affecting the Old Continent and in particular the countries of the European Union (EU). In turn, the functional nature of regional development implies a territorial approach to the management of the respective communities, leaving the centralized system. In this respect, the focus on Rural areas (RA) challenges us to solve a series of complex tasks related to the socio-economic and environmental development of these areas. The European Union's rural development policy is driven by concomitant factors (social, economic and environmental) that approximately 60% of the population of the 27 Member States live in rural areas, covering 90 % of the Union's territory. Rural areas in the Community are diverse in a number of factors - physiographic, geopolitical, administrative, socio-economic, environmental, institutional, technological and others. This difference is one of their greatest resources within the EU, but it still poses challenges for many Member States in defining and defining a territory as a 'rural area'. The main reasons are the differences in the socio-economic development, the administrative division, the number of the population and last but not least the size (area) of the respective country in the EU.

After Bulgaria's accession to the EU in 2007, the problems in rural areas came to the fore, and the “Rural Development Program” was re-adopted nationally (RDP), in a programming period of seven years. On this basis, there is an accepted definition, which defines the respective territory for “rural municipality” or “region” [2].

Geodemographic considers two types of migration processes: internal and external [11]. Internal processes or mechanical movement take place within the borders of the state between its administrative-territorial units and settlements, from the highest to the lowest level of the NUTS classification, between the types of settlements: “village-city”, “city-city” Town-village” and “village-village”. This type of migration does not

include daily travel for work and study, as well as suburbanization as a process [8]. The internal mechanical movements in the RA of Bulgaria include: settlements and emigration, as well as various types of social, economic, environmental and other types of processes caused by the need for better education, work and raising living status [4, 7]. External migrations are characterized by crossing state and continental borders, moving from one region/state to another.

The national definition defines as a rural area - the municipalities of (LAU 1), in which there is no settlement (municipality) with a population of over 30,000 people. According to this definition, 232 of them are classified as rural, out of a total of 265 municipalities in Bulgaria for 2020. This means that the issues related to rural development cover over 82 % of the territory of the Republic of Bulgaria with a population of approximately 35-40 % of the total number (due to high migration, negative growth, deteriorating socio-economic picture and not lastly, the low life expectancy - most municipalities in the country move to the category of rural, adhering to the above definition).

In 2021, the municipality of Nessebar was separated from the administrative-territorial structure - the municipality of Obzor, the decision has not yet been promulgated in the State Gazette. Based on the above definition, the "new territory" will belong to rural municipalities.

On the other hand, the territory of the Republic of Bulgaria is divided into districts according to the NUTS 3 Territorial Unit Nomenclature, which means 28 districts, seven of which are rural. One of the main factors for analyzing the access to digital services is to monitor the migration of the population according to the services provided in rural areas and the access of the population to the Internet. The demographic factor and how much of the population in these rural areas can use the internet to access digital services are essential.

MATERIALS AND METHODS

The above definition for rural areas, united by the districts in which they are located, is adopted in the development, and they in turn are grouped according to their administrative-territorial division in the respective planning regions. Based on the Law on Regional Development in force since 31.08.2008, Prom. NP. 50 of 30 May 2008, amended NP. 21 of 13 March 2020, Chapter Two - Territorial basis of regional development, Art. 4. (3) (suppl. - NP 21/20, in force from 13.03.2020) [3].The regions, which form level 2, shall be regions for planning, shall not represent administrative-territorial units and shall have territorial scope.

The aim of the study is to study and analyze the mechanical growth in per thousand (‰) for rural areas and Rural areas for the period 2015-2019. In the context of migration processes to make a comparison for migration and whether the direction of movement is in areas with higher access to digital services (internet). The information includes the total number of the population for Bulgaria, settled, displaced, as well as that in rural (municipalities) areas. The research is based on a mathematical approach and analysis in the processing of statistical information by (NSI), reducing the numerical indicator to per thousand (‰). Applying the formula for calculating the mechanical movement of the population for a certain period of time:

$$(A - B) / G *1,000 = D$$

where:

A – Populated (in the year of the survey)

B – Emigrants (in the year of the survey)

G – Total population of the previous year (in thousands) *1,000 – Coefficient

D – per thousand (‰)

The survey used statistical information from the National Statistical Institute [6], Eurostat [1], and the Ministry of Agriculture and Food [5], as well as definitions and definitions from the Rural Development Program 2007-2013 [10]. The development is based on the Regional Development Act of 2008. For the

processing of numerical values, the program - Excel is applied.

RESULTS AND DISCUSSIONS

Migrations as a social process accompany the development of human civilization, at all stages of its development, and they have a geodemographic, economic, social, environmental or political nature. The basis for the movement of the population from one territory to another is its number [14]. During different historical periods, it has changed its number, influenced by a number of socio-economic factors.

The study includes the total population of the country, as well as the systematized number of the same, located in the RA, as a base (the total population of the RA of Bulgaria is derived), grouped in the six regions according to the NUTS 2 classification, specified in Table 1 in thousand, for a period of five years 2015-2019.

Table 1. Population in the country and RA by regions

District	2015	2016	2017	2018	2019
Bulgaria	7,153,784	7,101,859	7,050,034	7,000,039	6,951,482
RA of Bulgaria	**2,376,901**	**2,378,512**	**2,364,896**	**2,338,166**	**2,342,102**
Northwest	410,471	421,332	422,288	413,068	404,814
North Central	292,683	288,056	283,404	278,604	274,479
Northeast	369,919	366,349	362,549	358,822	356,426
Southwest	348,332	343,591	339,305	359,386	360,477
South central	569,996	577,048	578,633	564,410	572,976
Southeast	385,500	382,136	378,717	363,876	372,930

Source: NSI [6] and authors' calculations.

The analysis of the population of Bulgaria, visualized in Table 1 includes the period from 2015 to 2019, showing a decrease of the same. Within 5 years, the decline is 202,302 peoples, according to official statistics. For 2015 the population in the RA of the country is 33.23% of the total number, overlapping the European values in the same regions. During the study period, no sharp changes in the number of population in the RA of the country were reported. The lowest indicators for SR in the country were reported in 2018, compared to the original year there was a decrease of 38,735 people. The north-western region for the whole period of the study reported a gradual decline in population, and in the end, it decreased by 32,377 peoples, or 9.47%. For the North Central region, the geodemographic picture is similar with negative values for the whole period. In the Northeast region for the five-year period, the decline is insignificant. The only region that reports population growth in the RA is the Southwest - the mechanical growth is 12,145 peoples, or 3.48%, the population is growing in the last two years of research. The South Central region during the study period reported minimal values of change between positive and negative aspects. The south-eastern region follows the gradual decline of the population in the SR, and from the initial to the final period; the negative value is 12 570 people.

The mechanical movement (MM) of the population is part of the geodemographic processes taking place at the micro and macro level. The process involves the settlement and emigration of the population of a given territory and determines the values of the Mechanical Growth for a certain period of time.

Table 2 shows the MM of the population in the RA by regions, related to the total number of RA in Bulgaria and that of the country, as numerical values in per thousand (‰).

The mechanical movement of the population has been studied and analyzed (in chronological order) for five years, including the total number of RA and the population in them, as well as the grouping of the same by regions.

Table 2. Ratio of Mechanical movement in per thousand (‰) to RA and Bulgaria

District	RA	BG	RA	BG	RA	BG	RA	BG	RA	BG
	2015		2016		2017		2018		2019	
RA of Bulgaria	4.22	1.40	-4.19	-1.34	-2.85	-0.95	-2.93	-0.98	0.68	0.23
Northwest	0.93	0.31	-1.27	-0.41	-1.15	-0.38	-1.22	-0.41	-0.95	-0.32
North Central	0.03	0.01	-0.62	-0.20	-0.53	-0.18	-0.96	-0.32	-0.59	-0.20
Northeast	1.20	0.40	-0.20	-0.07	-0.09	-0.03	-0.11	-0.04	0.43	0.14
Southwest	1.07	0.35	-0.65	-0.21	-0.35	-0.12	-0.47	-0.16	-0.13	-0.04
South central	0.48	0.16	-1.19	-0.38	-0.55	-0.19	0.02	0.01	1.64	0.55
Southeast	0.88	0.29	-0.30	-0.10	-0.18	-0.06	-0.19	-0.06	0.27	0.09

Source: NSI [6] and authors' calculations.

For the RA of the country during the study period 2015-2019, per thousand are in negative value except for 2015, positive - both for themselves and compared to the country. Over the next three years, per thousand was negative, at the lowest level for 2016. In the last year of the survey, the figures were zero.

During the five years of research, in the North-West region the values of MM in rural areas, calculated according to the population of the country, report negative numerical values. An exception is 2015, where the values are above zero.

In the North Central region, the geodemographic picture of the MM does not differ from the other territories visualized in Table 2. During the 2015-2019 survey period, the numerical values of ‰ were negative.

The northeastern region, compared to the previous one, has better numerical indicators, in the first year, the values are slightly above zero and in 2015, the MM in the RA has a positive sign. At the end of the study, the values are slightly above zero. In other years, per thousand is negative.

In the South-West region, only before 2015, the RA reported positive values above zero. During the remaining years of research, the analysis showed negative numerical values.

The South-Central region has the best indicators compared to other territories. The only negative values were reported in 2016-2017, as significantly lower than the same in other regions. In other years, the numerical expression in ppm has a positive sign.

The southwestern region in the first year reported values slightly above zero. The negative numbers of MM are in the period 2016-2018. At the end of the study, the values are slightly above the numerical zero expression.

The number of the population as a numerical expression has always been important for the course of geodemographic processes at the micro and macro level [12].

The total number of the population was used in the study as a basic indicator for comparison of the same from the RA, grouped in regions for the five-year study period, presented in Fig. 1.

In the first year of 2015 (7,153,784 in the country), the analysis showed that all regions had a positive increase in MM. With minimal values in ‰ is the North-Central region, followed by the South Central. High indicators are reported in the total number of RA in the country, as well as in the regions - Northeast and Southwest. Over the next three years of the survey, all regions, including the total number of RA for the country, reported negative MM indicators.

The last year, 2019, (number in the country 6,951,482 people) the values in per thousand (‰), show with the highest growth of MM in the South-Central region, followed by the total number of RA in the country, Northeast and Southeast. The others have a negative numerical indicator.

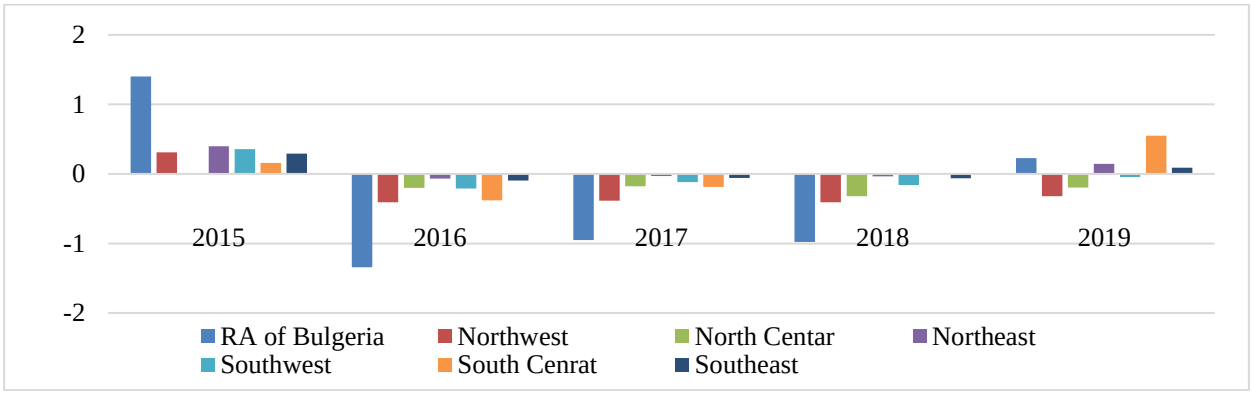

Fig. 1. Mechanical movement in per thousand (‰) in RA, grouped by regions, relative to the total population of BG
Source: NSI [6] and authors' calculations.

In connection with the correct idea of migration processes, it is appropriate to present information on rural areas according to the NUTS 3 division, namely: Vidin, Razgrad, Silistra, Targovishte, Smolyan, Kardzhali, Sofia region. As a basis for comparison, calculations have been added for the average coefficient of mechanical growth and that for the average level in Bulgaria. The period under consideration is five years 2015-2019.

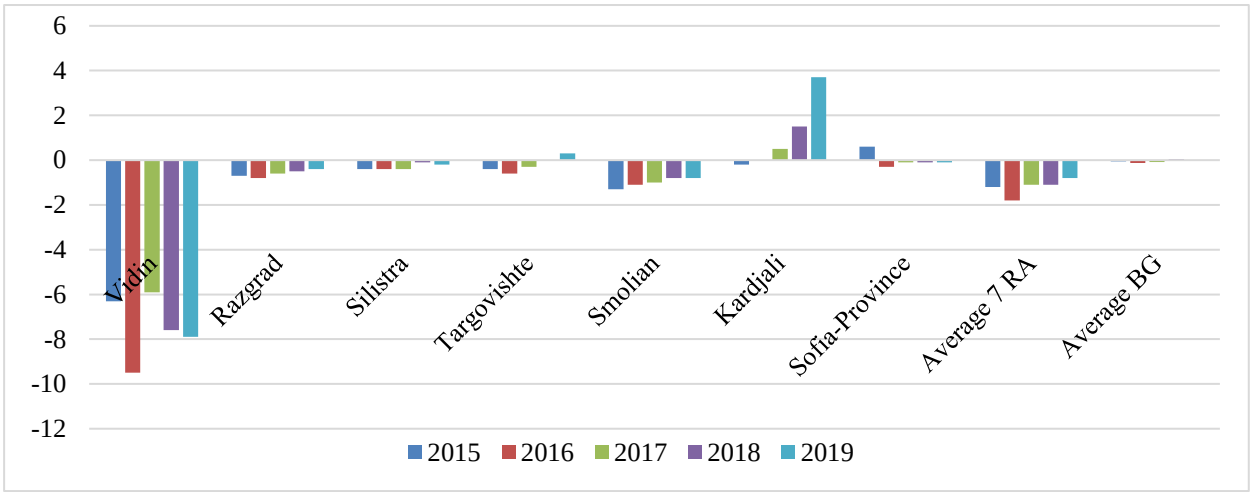

Fig. 2. Mechanical growth rate of rural areas in Bulgaria and average values at national level, in per thousand (‰)
Source: https://www.regionalprofiles.bg/bg/[9] and authors' calculations.

Of all the considered areas, the most drastic decrease of the mechanical growth coefficient is observed in Vidin, as it reaches its lowest value in 2016, and at the end of the considered period it reaches values of -7.9 ‰. This remains the only area with a negative trend in the period under review.

There are two districts that are experiencing an increase in the rate of mechanical growth and these are Kardzhali and Targovishte. The increase is larger in Kardzhali and there is a change from negative values at the beginning of the period, reaching + 3.7 ‰ at the end. In Targovishte district for 2019, this value reaches only + 0.30 ‰, but still has a positive value.

Only Sofia district at the beginning of the period under review has a positive value and in 2019 is already below zero. The explanation can only be the greater migration to the capital and Sofia region, as the closest is, respectively, the most affected by this process.

For the other districts of Razgrad and Silistra there is a similar trend of a slight increase in the coefficient of mechanical growth, but it still remains with negative values. This trend is maintained as an average coefficient for the seven areas considered. At the national level,

no significant changes in the mechanical growth rate are observed. In connection with digitalization and access to Internet services, below in Fig. 3, is presented data on the relative share of households with Internet access and the relative share of persons aged between 16 and 74 using the Internet regularly (every day or at least once a week).

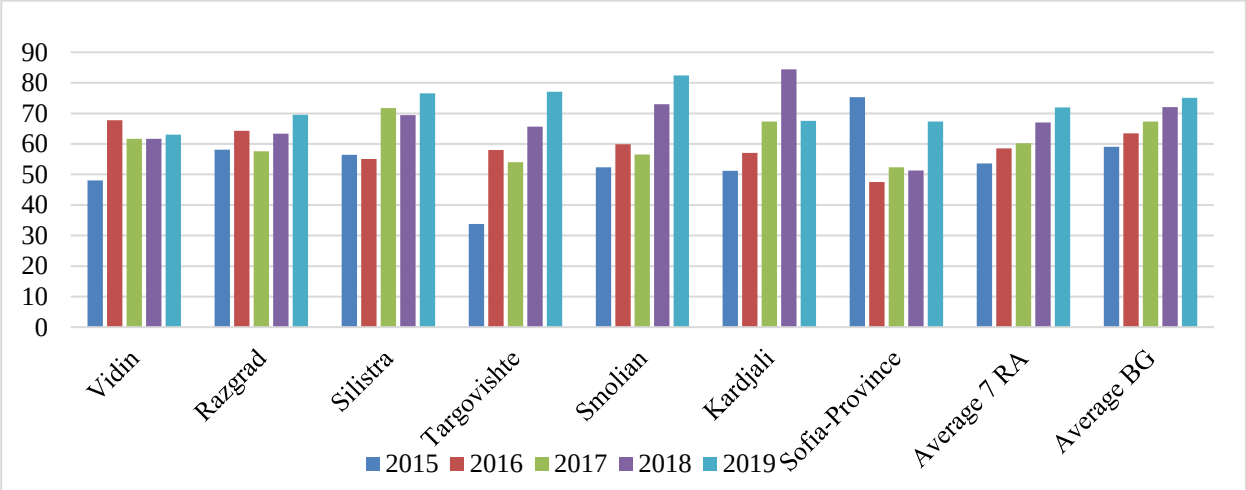

Fig. 3. Relative share of households with internet access in percentage (%)
Source: NSI [6] and authors' calculations.

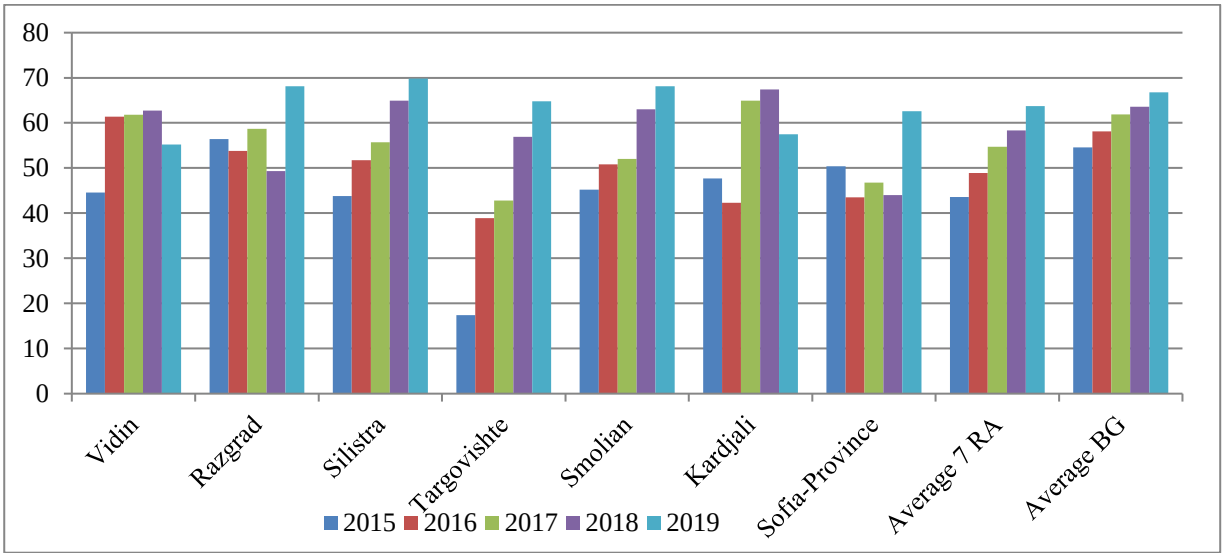

Fig. 4. People aged 16-74, using the Internet regularly in percentage (%)
Source: NSI [6] and authors' calculations.

According to the data presented in Figures 3 and 4, the following findings can be made:

-The relative share of households with Internet access is highest in Smolyan district with a value of 82.4%, and the increase in the period 2015-2019 is about 30 %. This leads to a 22.9% higher share of regular internet use.

-The biggest jump in Internet access is in Targovishte district, with an increase of 43.3%, and at the end of the period compared to the beginning it reached 77.1%. This also affects the share of regular internet use and it increased from a modest 17.4% in 2015 to 64.8% at the end of the 5-year period.

-In the districts of Vidin, Razgrad and Kardzhali similar trends are observed and there the share of households with Internet access is about 65-70 % at the end of the period and the average regular use increases by 10-12 % for the period.

-Sofia District is the only district with a decrease in household access to the Internet but at the same time an increase in its regular use.

-On average, for the 7 considered districts there is an increase for the considered period of the share of households with Internet access by 18.3 %, and the share of those who regularly use the service increases by 20.1 %.
The average for the country also has an increase but it is less than the average for rural areas.

CONCLUSIONS

The analysis of the mechanical movement of the population gives a clear geodemographic picture of the migratory mobility, during the study (2015-2019), settlement, emigration, as well as the coefficient of mechanical growth of a given territory. The population of the country has been declining for decades and the reasons are socio-economic, and this is most pronounced in rural areas. Migration to major cities and abroad are the main processes for the mechanical movement of the population. Negative values in rural areas during the study period are typical for all areas. The territories located in the northwestern and North-central part of the country have deteriorated geodemographic indicators [13]. The demographic picture of negative numerical indicators is also reported in the regional cities of the above-mentioned regions. According to the results of the presented data on migration processes, the increasing availability of the Internet and the increasing dynamics of its use are enough to conclude that rural areas and districts are shrinking and moving towards a higher technological standard. It is normal for the development of technology to affect smaller areas, although this is happening at a slow pace. For the considered period of 5 years, we observe a good result of a higher share of Internet access and more frequent use on a daily basis.
This implies facilitation in the use of some of the services that have been more difficult to access in the past and the tendency is for this process to be optimized and for the population to acquire higher qualifications.

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